

Claims

What is claimed is:

1. A method of supporting Internet Protocol (IP) based services initiated through a public network, the services directed to a mobile device through a private network, the method including the steps of:

5 assigning a long lived IP address and a user name to the mobile device in a wireless network; the long lived address mapping the mobile device to a zone of the private network;

10 providing a server having an IP address within said zone and including a database having a cross reference between said user name and said long lived IP address for said mobile station;

15 connecting an address space of said zone to the public network using a network address translator (NAT);

20 initiating a push session between a push client and the mobile device by forwarding from said push client to said server said user name;

25 retrieving and returning to said NAT said long lived IP address corresponding to said user name; and

30 assigning a dynamic public address that corresponds to said long lived IP address, thus the mobile device, using an application level gateway that is associated with said NAT and returning said dynamic public address to said push client.

2. The method of claim 1 wherein said step of assigning a long lived IP address further includes including said long lived IP address in a home location register database within a radio network.

3. The method of claim 1 wherein said step of assigning a long lived IP address further includes programming said long lived IP address into the mobile device.

4. The method of claim 1 wherein said step of initiating a push session further includes creating an IP connection across a radio access network between the mobile station and the private network.

5 5. The method of claim 1 wherein said step of providing a server includes providing a session initiation protocol (SIP) registrar server.

6. The method of claim 1 wherein said step of providing a server includes providing a domain name service (DNS) server.

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7. The method of claim 1 wherein said step of providing a server includes providing wireless application protocol (WAP) server.

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8. The method of claim 1 wherein said step of assigning a dynamic public address using an application level gateway (ALG) includes using one of a SIP ALG, DNS ALG, and WAP ALG.

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9. The method of claim 1 further including a step of supplying content from the push client to the mobile device using an IP connection, including said dynamic public address, between the push client and the NAT and another IP connection, including the long lived IP address, between the NAT and the mobile device.

10. A private network that is arranged and constructed to support Internet Protocol (IP) based services initiated through a public network, the services directed to a mobile device through the private network, the private network including in combination:

5 a server having an IP address within a zone of the private network that is accessible from the public network, the server including a database having a cross reference between a user name and a long lived IP address assigned to the mobile device, said long lived address mapping the mobile device to said zone;

10 a network address translator (NAT), coupled to said server, suitable for connecting an address space corresponding to said zone to the public network using address translation, said NAT receiving said user name from a push client and forwarding said user name to said server; and

15 an application level gateway that is associated with said NAT and that, responsive to said forwarding said user name, receives said long lived IP address from one of said server and the mobile device and assigns a corresponding dynamic public address which is returned to said push client, thereby enabling said push client to provide content to the mobile device having a long lived IP address.

20 11. The private network of claim 10 further including a radio access network with a home location register that includes said long lived IP address and facilitates establishing a long lived IP context between the mobile device and said radio access network.

25 12. The private network of claim 10 wherein the mobile is programmed with and thus uniquely identified within said private network by said long lived IP address.

30 13. The private network of claim 10 wherein said server is a session initiation protocol (SIP) registrar server.

14. The private network of claim 10 wherein said server is a domain name service (DNS) server.

15. The private network of claim 10 wherein said server is a wireless application protocol (WAP) server.

16. The private network of claim 10 wherein said application level gateway (ALG) is one of a SIP ALG, DNS ALG, and WAP ALG.

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17. A private network that is arranged and constructed to support Internet Protocol (IP) based services initiated through a public or private network, the services directed to a mobile device through the private network, the private network including in combination:

- 5 a server having an IP address within a zone of the private network that is accessible from the public network, the server including a database having a cross reference between a user name and a long lived IP address assigned to the mobile device, said long lived address mapping the mobile device to said zone;
- 10 a network address translator (NAT), coupled to said server, suitable for connecting an address space corresponding to said zone to the public network using address translation, said NAT receiving said user name from a push client and forwarding said user name to said server;
- 15 an application level gateway that is associated with said NAT and that, responsive to said forwarding said user name, receives said long lived IP address from one of said server and the mobile device and assigns a corresponding dynamic public address which is returned to said push client, thereby enabling said push client to provide content to the mobile device having a long lived IP address; and
- 20 a second push client with an address inside the private network arranged and constructed to push services to the mobile wherein one of said server, said NAT, and said ALG operate to insure preferential access to the mobile from the second push client.